

**AMENDMENTS TO THE CLAIMS**

**This listing of claims will replace all prior versions and listings of claims in the application:**

**LISTING OF CLAIMS:**

1. (currently amended): A gallium nitride compound semiconductor light-emitting device comprising:

a crystalline substrate (10);

a light-emitting layer (15) comprised of a multiple quantum well structure that is formed of at least one gallium nitride compound semiconductor barrier layer doped with an impurity element and at least one gallium nitride compound semiconductor well layer undoped with any impurity element, said light-emitting layer being provided on a second side of the crystalline substrate;

a contact layer (17) formed of a Group III-V compound semiconductor for providing an Ohmic electrode for supplying device operation current to the light-emitting layer; and

an Ohmic electrode (18) that is provided on the contact layer and has an aperture through which a portion of the contact layer is exposed,

wherein the Ohmic electrode exhibits light permeability with respect to light emitted from the light-emitting layer, all of the individual gallium nitride compound semiconductor well layers of the multiple quantum well structure light emitting device each has the same composition and contains a thick portion having a large thickness and a thin portion having a thickness of 1.5 nm or less;

wherein the at least one barrier layer is a barrier layer which is doped with a Group IV element at an average atom density of  $1 \times 10^{17} \text{ cm}^{-3}$  to  $5 \times 10^{18} \text{ cm}^{-3}$  for the purpose of decreasing the forward voltage of the device, and

wherein the at least one gallium nitride compound semiconductor well layer is a discontinuous layer including a portion having a thickness of 0 nm.

2-4. (canceled)

5. (previously presented): A gallium nitride compound semiconductor light-emitting device according to claim 1, wherein the predetermined impurity element added only to the barrier layer is silicon.

6. (previously presented): A gallium nitride compound semiconductor light-emitting device according to claim 1, wherein the contact layer (17) is doped with an n-type impurity element and has a carrier concentration of  $5 \times 10^{18} \text{ cm}^{-3}$  to  $2 \times 10^{19} \text{ cm}^{-3}$ .

7. (previously presented): A gallium nitride compound semiconductor light-emitting device according to claim 1, wherein the contact layer (17) is doped with a p-type impurity element and has a carrier concentration of  $1 \times 10^{17} \text{ cm}^{-3}$  to  $1 \times 10^{19} \text{ cm}^{-3}$ .

8. (original): A gallium nitride compound semiconductor light-emitting device according to claim 7, wherein the contact layer (17) is doped with a p-type impurity element and has a carrier concentration of  $1 \times 10^{17} \text{ cm}^{-3}$  to  $5 \times 10^{18} \text{ cm}^{-3}$ .

9. (previously presented): A gallium nitride compound semiconductor light-emitting device according to claim 1, wherein the contact layer (17) has a thickness of 1  $\mu\text{m}$  to 3  $\mu\text{m}$ .

10. (previously presented): A gallium nitride compound semiconductor light-emitting device according to claim 1, wherein the Ohmic electrode (18) exhibits a transmittance at the wavelength of emitted light of 30% or higher.

11. (previously presented): A gallium nitride compound semiconductor light-emitting device according to claim 1, wherein the Ohmic electrode (18) has a thickness of 1 nm to 100 nm.

12. (previously presented): A gallium nitride compound semiconductor light-emitting device according to claim 1, further comprising a metallic reflecting mirror (21) for reflecting light emitted from the light-emitting layer (15) to the outside, which mirror is provided on a first

side of the crystalline substrate (10), wherein the metallic reflecting mirror (21) contains a metallic material identical to that contained in the Ohmic electrode (18).

13. (original): A gallium nitride compound semiconductor light-emitting device according to claim 12, wherein the metallic reflecting mirror (18) has a multilayer structure including a metallic film which contains a metallic material identical to that contained in the Ohmic electrode (18).

14. (previously presented): A gallium nitride compound semiconductor light-emitting device according to claim 1, wherein the metallic reflecting mirror (21) contains a single-metal film or an alloy film formed from at least one member selected from the group consisting of silver, platinum, rhodium and aluminum.

15. (previously presented): A gallium nitride compound semiconductor light-emitting device according to claim 1, wherein the metallic reflecting mirror (21) is in the form of multilayer film.

16. (previously presented): A light-emitting diode employing the gallium nitride compound semiconductor light-emitting device according to claim 1.

17. (previously presented): A lamp employing the gallium nitride compound semiconductor light-emitting device according to claim 1.

18. (canceled)

19. (previously presented): A gallium nitride compound semiconductor light-emitting device according to claim 1, wherein the at least one barrier layer is an Si-doped n-type GaN barrier layer.

20. (previously presented): A gallium nitride compound semiconductor light-emitting device according to claim 1, wherein apertures are formed such that a total surface area of the apertures accounts for 30% to 80% of a surface of the contact layer.

21. (previously presented): A gallium nitride compound semiconductor light-emitting device according to claim 1, wherein a minimum horizontal width (lateral width) of a metallic film constituting the Ohmic electrode is 10  $\mu\text{m}$  or less, and a horizontal width of the aperture is 0.5  $\mu\text{m}$  to 50  $\mu\text{m}$ .

22. (previously presented): A gallium nitride compound semiconductor light-emitting device according to claim 20, wherein a minimum horizontal width (lateral width) of a metallic film constituting the Ohmic electrode is 10  $\mu\text{m}$  or less, and a horizontal width of the aperture is 0.5  $\mu\text{m}$  to 50  $\mu\text{m}$ .